

WHAT IS CLAIMED:

1. A purified DNA molecule encoding a human nNR7 protein wherein said protein comprises the amino acid sequence as follows:

5 SILCTGLFKV DPRGEVGAKN LPPSSPRGPE ANLEVRPKES WNHADVFHCE
DTESVPGKPS VNADEEVGGP QICRVCGDKA TGYHFNVMTC EGCKGFFRRA
MKRNARLRCP FRKGACEITR KTRRQCQACR LRKCLESGMK KEMIMSD EAV
EERRALIKRK KSERTGTQPL GVQGLTEEQR MMIRELMDAQ MKTFDITFSH
10 FKNFRLPGVL SSGCELPESL QAPSREEAAK WSQVRKDLCS LKVS LQLRGE
DGSVWNYKPP ADSGGKEIFS LLPHMADMST YMFKGIISFA KVISYFRDLP
IEDQISLLKG AAFELCQLRF NTVFNAETGT WECGRLSYCL EDTAGGFQQL
LLEPMLKFHY MLKKLQLHEE EYVLMQAISL FSPDRPGVLQ HRVVDQLQEQ
FAITLKS YIE CNRPQPAHRF LFLKIMAMLT ELRSINAQHT QRLRLRIQDIH
15 PFATPLMQEL FGITGS, as set forth in three-letter
abbreviation in SEQ ID NO: 2.

2. An expression vector for expressing a human nNR7 protein in a recombinant host cell wherein said expression vector comprises a DNA molecule of claim 1.

3. A host cell which expresses a recombinant human nNR7 protein wherein said host cell contains the expression vector of claim 2.

4. A process for expressing a human nNR7 protein in a recombinant host cell, comprising:

(a) transfecting the expression vector of claim 2 into a suitable host cell; and,

(b) culturing the host cells of step (a) under conditions which allow expression of said the human nNR7 protein from said expression vector.

5. A purified DNA molecule encoding a human nNR7 protein wherein said protein consists of the amino acid sequence as follows:

SILCTGLFKV DPRGEVGAQN LPPSSPRGPE ANLEVRPKES WNHADFVHCE
 DTESVPGKPS VNADEEVGGP QICRVCGDKA TGYHFNVMTC EGCKGFFRRA
 MKRNARLRCP FRKGACEITR KTRRQCQACR LRKCLESGMK KEMIMSDEAV
 EERRALIKRK KSERTGTQPL GVQGLTEEQR MMIRELMDAQ MKTFDITFSH
 FKNFRLPGVL SSGCELPESL QAPSREEAAK WSQVRKDLCS LKVSLLQLRGE
 DGSVWNYKPP ADGGGKEIFS LLPHMADMST YMFKGIISFA KVISYFRDLP
 IEDQISLLKG AAFELCQLRF NTVFNAETGT WECGRLSYCL EDTAGGFQQL
 LLEPMLKFHY MLKKLQLHEE EYVLMQAISL FSPDRPGVLQ HRVVDQLQEQ
 FAITLKSYLE CNRPQPAHRF LFLKIMAMLT ELRSINAQHT QRLRLIQDIH
 PFATPLMQEL FGITGS, as set forth in three-letter abbreviation in
 SEQ ID NO: 2.

6. An expression vector for expressing a human nNR7 protein in a recombinant host cell wherein said expression vector comprises a DNA molecule of claim 5.

7. A host cell which expresses a recombinant human nNR7 protein wherein said host cell contains the expression vector of claim 6.

8. A process for expressing a human nNR7 protein in a recombinant host cell, comprising:

(a) transfecting the expression vector of claim 6 into a suitable host cell; and,

(b) culturing the host cells of step (a) under conditions which allow expression of said the human nNR7 protein from said expression vector.

9. A purified DNA molecule encoding a human nNR7 protein wherein said DNA molecule consists of the nucleotide sequence as set forth in SEQ ID NO: 1, as follows:

34

1000000.030402

AGGGAAATTC TGCTATGACA GCTGGCTAGC ATTCCCTCAGG AAGGACATGG
GTGCCCCCA CCCCCAGTTC AGTCTGTAGG GAGTGAAGCC ACAGATTCTT
ACGTGGAGAG TGCAC TGACTGACC TGTAGGTCAG GACCATCAGA GAGGCAAGGT
TGCCCTTTCC TTTTAAAAGG CCCTGTGGTC TGGGGAGAAA TCCCTCAGAT
5 CCCACTAAAG TGTC AAGGTG TGG AAGGGAC CAAGCGACCA AGGATAGGCC
ATCTGGGGTC TATGCCACACA TACCCACGTT TGTTCGCTTC CTGAGTCTTT
TCATTGCTAC CTCTAATAGT CCTGTCTCCC ACTTCCCACT CGTTCCCTTC
CTCTTCCGAG CTGCTTTGTG GGTCCAGGC CTGTACTCAT CGGCAGGTGC
ATGAGTATCT GTGGGAGTCC TCTAGAGAGA TGAGAAGCCA GGAGGCCTGC
10 ACCAAATGTC AGAAGCTTGG CATGACCTCA TTCCGGCCAC ATCATTCTGT
GTCTCTGCAT CCATTGTAAC ACATTATTAA GCACCGATAA TAGGTAGCCT
GCTGTGGGGT ATACAGCATT GACTCAGATA TAGATCCTGA GCTCAGAGAG
TTTATAGTTA AAAAAACAAA CAGAAACACA AACAATTGG ATCAAAAGGA
GAAATGATAA GTGACAAAAG CAGCAC AAGG AATTTCCTGT TGTGGATGCT
15 GAGCTGTGAT GCGGGGCACT GGTACCCAA GTGAAGGTTT CCGAGGACAT
GAGTCTGTAG GAGCAAGGC ACAAACTGCA GCTGTGAGTG CGTGTGTGTG
ATTTGGTGTA GGTAGGTCTG TTTGCCACTT GATGGGGCTT GGGTTTGTTC
CTGGGGCTGG AATGCTGGGT ATGCTCTGTG ACAAGGCTAC GCTGACAATC
AGTTAAACAC ACCGGAGAAG AACCATTTC ATGCACCTTA TATTCTGTG
20 TACACATCTA TTCTCAAAGC TAAAGGGTAT GAAAGTGCCT GCCTTGTTTA
TAGCCACTTG TGAGTAAAAA TTTTTTTGCA TTTTCACAAA TTATACTTTA
TATAAGGCAT TCCACACCTA AGAACTAGTT TTGGGAAATG TAGCCCTGGG
TTTAATGTCA AATCAAGGCA AAAGGAATTA AATAATGTAC TTTTGGCTAG
AGGGGTAAAC TTTTTTGGCC TTTTCTGGG GAAAATAATG TGGGGGTGTG
25 GGAATTTCGAA TTCGATATCA AGCTTATCGA TACCGTCGAC CTCGAGGGGG
GGCCCGGTAC CCAATTGCGC CTATAGTGAG TCGATTACA ATT
(SEQ ID NO: 1).

10. A DNA molecule of claim 9 which consists of
30 nucleotide 276 to about nucleotide 1676 of SEQ ID NO: 1.

11. An expression vector for expressing a human nNR7
protein wherein said expression vector comprises a DNA molecule of
claim 9.

35

12. An expression vector for expressing a human nNR7 protein wherein said expression vector comprises a DNA molecule of claim 10.

5 13. A host cell which expresses a recombinant human nNR7 protein wherein said host cell contains the expression vector of claim 11.

10 14. A host cell which expresses a recombinant human nNR7 protein wherein said host cell contains the expression vector of claim 12.

15 15. A process for expressing a human nNR7 protein in a recombinant host cell, comprising:

(a) transfecting the expression vector of claim 11 into a suitable host cell; and,

20 (b) culturing the host cells of step (a) under conditions which allow expression of said the human nNR7 protein from said

25 16. A purified human nNR7 protein which comprises the amino acid sequence as set forth in SEQ ID NO:2.

17. A purified human nNR7 protein of claim 16 which consists of the amino acid sequence as set forth in SEQ ID NO:2.

30 18. A method for determining whether a substance is capable of binding to nNR7 comprising:

(a) providing test cells by transfecting cells with an expression vector that directs the expression of nNR7 in the cells;

(b) exposing the test cells to the substance;

35 (c) measuring the amount of binding of the substance to nNR7;

(d) comparing the amount of binding of the substance to nNR7 in the test cells with the amount of binding of the substance to control cells that have not been transfected with nNR7.

- 5 19. A method of determining whether a substance acts as a modulator of nNR7 activity which comprises:
 - (a) providing test cells by transfecting cells with a receptor expression vector that directs the expression of nNR7 in the cells;
 - 10 (b) providing test cells by transfecting the cells of step (a) with a second reporter expression vector that directs expression of a reporter gene under control of a regulatory element which is responsive to nNR7
 - (b) exposing the test cells to the substance;
 - 15 (c) measuring the amount of binding of expression of the reporter gene;
 - (d) comparing the amount of expression of the reporter gene in the test cells with the amount of expression of the reporter gene in control cells that has been transfected with a reporter vector of step (b)
 - 20 but not a receptor vector of step (a).

20. A purified DNA molecule encoding a human nNR7 protein wherein said protein comprises the amino acid sequence as follows:
 - 25 MTVTRTHHFK EGSLRAPAIP LHSAAEELAS NHPRGPEANL EVRPKESWNH
ADVFHCEDETE SVPGKPSVNA DEEVGGPQIC RVC GDKATGY HFNVMTCGEC
KGFFRRAMKR NARLRCPFRK GACEITRKTR RQCQACRLRK CLESGMKKEM
IMSDEAVEER RALIKRKKSE RTGTQPLGVQ GLTEEQRMMI RELMDAQMKT
FDTTFSHFKN FRLPGVLSSG CELPESLQAP SREEAAKWSQ VRKDLC SLKV
 - 30 SLQLRGEDGS VWNYPKPADS GGKEIFSLLP HMA DMSTYMF KGIISFAKVI
SYFRDLPIED QISLLKGA AF ELCQLRFNTV FNAETGTWEC GRLSYCLEDT
AGGFQQLLLE PMLKFHYMLK KLQLHEEEYV LMQAISL FSP DRPGVLQHRV
VDQLQEQFAI TLKSYIECNR PQPAHRFLFL KIMAMLT ELR SINAQHTQRL
LRIQDIHPFA TPLMQELFGI TGS, as set forth in the three-letter
 - 35 abbreviation in SEQ ID NO: 18.

21. An expression vector for expressing a human nNR7-1 protein in a recombinant host cell wherein said expression vector comprises a DNA molecule of claim 20.

22. A host cell which expresses a recombinant human nNR7-1 protein wherein said host cell contains the expression vector of claim 21.

23. A process for expressing a human nNR7-1 protein in a recombinant host cell, comprising:

(a) transfecting the expression vector of claim 21 into a suitable host cell; and,

(b) culturing the host cells of step (a) under conditions which allow expression of said the human nNR7-1 protein from said expression vector.

24. A purified DNA molecule encoding a human nNR7-1 protein wherein said protein consists of the amino acid sequence as follows:

MTVTRTHHFK EGSLRAPAIP LHSAAAEAS NHPRGPEANL EVRPKESWNH
ADVFHCEDTE SVPGKPSVNA DEEVGGPQIC RVCQDKATGY HFNVMTCGEC
KGFFRRAMKR NARLRCPPFRK GACEITRKTR RQCQACRLRK CLESGMKKEM
IMSDAEVEER RALIKRKKSE RTGTQPLGVQ GLTEEQRMMI RELMDAQMKT
FDTTFSHFKN FRLPGVLSSG CELPESLQAP SREEAAKWSQ VRKDLCSLKV
SLQLRGEDGS VWNYPKPADS GGKEIFSLLP HMA DMSTYMF KGIISFAKVI
SYFRDLPIED QISLLKGA AF ELCQLRFNTV FNAETGTWEC GRLSYCLEDT
AGGFQQLLLE PMLKFHYMLK KLQLHEEEYV LMQAISLFSP DRPGVLQHRV
VDQLQEQFAI TLKSYIECNR PQPAHRFLFL KIMAMLTREL SINAQHTQRL
LRIQDIHPFA TPLMQELFGI TGS, as set forth in the three-letter
abbreviation in SEQ ID NO: 18.

25. An expression vector for expressing a human nNR7-1 protein in a recombinant host cell wherein said expression vector comprises a DNA molecule of claim 24.

26. A host cell which expresses a recombinant human nNR7-1 protein wherein said host cell contains the expression vector of claim 25.

5

27. A process for expressing a human nNR7-1 protein in a recombinant host cell, comprising:

(a) transfecting the expression vector of claim 25 into a suitable host cell; and,

(b) culturing the host cells of step (a) under conditions which allow expression of said the human nNR7-1 protein from said expression vector.

15

28. A purified DNA molecule encoding a human nNR7-1 protein wherein said DNA molecule consists of the nucleotide sequence as set forth in SEQ ID NO: 17, as follows:

20 TCCATCCTAA TACGACTCAC TATAGGGCTC GAGCGGCCGC CCGGGCAGGT
CTTTTGCCCT GCTGGGTTAG TGCTGGCAGC CCCCTGAGGC CAAGGACAGC
AGCATGACAG TCACCAGGAC TCACCACTTC AAGGAGGGGT CCCTCAGAGC
ACCTGCCATA CCCCTGCACA GTGCTGCGGC TGAGTTGGCT TCAAACCATC
CAAGAGGCC AGAAGCAAAC CTGGAGGTGA GACCCAAAGA AAGCTGGAAC
CATGCTGACT TGTGACACTG TGAGGACACA GAGTCTGTTC CTGGAAAGCC
25 CAGTGTCAAC GCAGATGAGG AAGTCGGAGG TCCCCAAATC TGCCGTGTAT
GTGGGGACAA GGCCACTGGC TATCACTTCA ATGTCATGAC ATGTGAAGGA
TGCCAAGGGCT TTTTCAGGAG GGCCATGAAA CGCAACGCCC GGCTGAGGTG
CCCCTCCGG AAGGGCGCCT GCGAGATCAC CCGGAAGACC CGGCACAGT
GCCAGCCCTG CCGCCTGCGC AAGTGCCTGG AGAGCGGCAT GAAGAAGGAG
30 ATGATCATGT CCGACGAGGC CGTGGAGGAG AGGCGGGCCT TGATCAAGCG
GAAGAAAAGT GAACGGACAG GGACTCAGCC ACTGGAGTG CAGGGGCTGA
CAGAGGAGCA GCGGATGATG ATCAGGGAGC TGATGGACGC TCAGATGAAA
ACCTTTGACA CTACCTTCTC CCATTTCAGG AATTTCGGCC TGCCAGGGGT
GCTTAGCAGT GGCTGCGAGT TGCCAGAGTC TCTGCAGGCC CCATCGAGGG
35 AAGAAGCTGC CAAGTGGAGC CAGGTCCGGA AAGATCTGTG CTCTTTGAAG
GTCTCTCTGC AGCTGCGGGG GGAGGATGCG AGTGCTTGA ACTACAACCC

- 51 -

ATAAGGCATT CCACACCTAA GAACTAGTTT TGGGAAATGT AGCCCTGGGT
 TTAATGTCAA ATCAAGGCAA AAGGAATTAA ATAATGTACT TTTGGCTAGA
 GGGGTAACT TTTTGGCCT TTTCTGGGG AAAATAATGT GGGGGTGTGG
 (SEQ ID NO: 17).

5

29. A DNA molecule of claim 28 which consists of nucleotide 104 to about nucleotide 1525 of SEQ ID NO: 17.

10 30. An expression vector for expressing a human nNR7-1 protein wherein said expression vector comprises a DNA molecule of claim 28.

15 31. An expression vector for expressing a human nNR7-1 protein wherein said expression vector comprises a DNA molecule of claim 29.

20 32. A host cell which expresses a recombinant human nNR7-1 protein wherein said host cell contains the expression vector of claim 30.

25 33. A host cell which expresses a recombinant human nNR7-1 protein wherein said host cell contains the expression vector of claim 31.

34. A process for expressing a human nNR7 protein in a recombinant host cell, comprising:

30 (a) transfecting the expression vector of claim 29 into a suitable host cell; and,

(b) culturing the host cells of step (a) under conditions which allow expression of said the human nNR7-1 protein from said expression vector.

35. A purified human nNR7-1 protein which comprises the amino acid sequence as set forth in SEQ ID NO:18.

5 36. A purified human nNR7-1 protein of claim 35 which consists of the amino acid sequence as set forth in SEQ ID NO:18.

37. A method for determining whether a substance is capable of binding to nNR7-1 comprising:

- 10 (a) providing test cells by transfecting cells with an expression vector that directs the expression of nNR7-1 in the cells;
- (b) exposing the test cells to the substance;
- (c) measuring the amount of binding of the substance to nNR7-1;
- 15 (d) comparing the amount of binding of the substance to nNR7-1 in the test cells with the amount of binding of the substance to control cells that have not been transfected with nNR7-1.

38. A method of determining whether a substance acts as a modulator of nNR7-1 activity which comprises:

- 20 (a) providing test cells by transfecting cells with a receptor expression vector that directs the expression of nNR7-1 in the cells;
- (b) providing test cells by transfecting the cells of step (a)
- 25 with a second reporter expression vector that directs expression of a reporter gene under control of a regulatory element which is responsive to nNR7-1
- (b) exposing the test cells to the substance;
- (c) measuring the amount of binding of expression of the
- 30 reporter gene;
- (d) comparing the amount of expression of the reporter gene in the test cells with the amount of expression of the reporter gene in control cells that has been transfected with a reporter vector of step (b) but not a receptor vector of step (a).

35